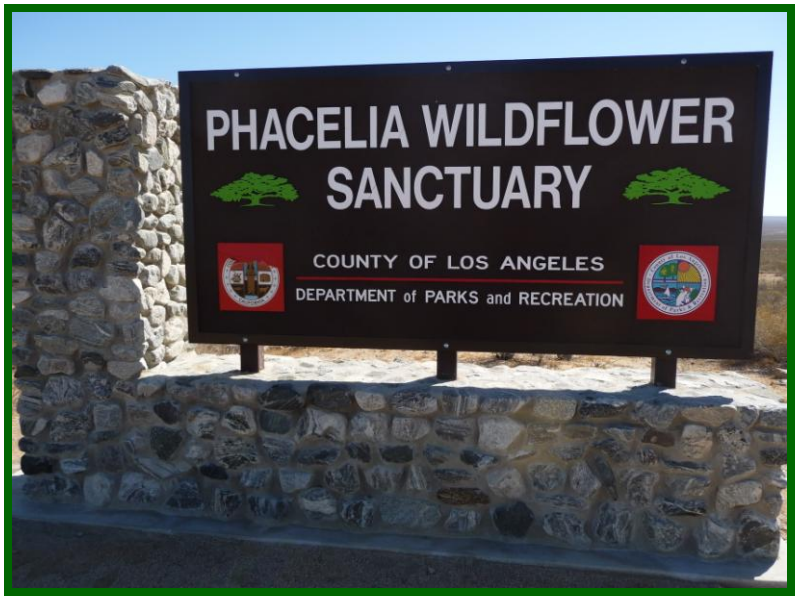
Mohave Ground Squirrel Trapping Results for Phacelia Wildflower Sanctuary, Los Angeles County, California



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1.0. INTRODUCTION

1.1. Purpose and Need for Study. Herein, Edward L. LaRue, Jr., the Principal Investigator under a Memorandum of Understanding (MOU) with the California Department of Fish and Wildlife (CDFW) (expires 4/30/2016), Scientific Collecting Permit Number SC-001544, reports results of trapping surveys to assess the presence of the state-listed, Threatened Mohave ground squirrel (MGS) (*Xerospermophilus mohavensis*) on the subject property. This study, which was completed on the Phacelia Wildflower Sanctuary Park (herein "Phacelia" or "Phacelia Sanctuary") in northeastern Los Angeles County (Figures 1 through 3), California is authorized under License Number 000975.

In recent decades, there have been very few MGS records in the desert region of northeastern Los Angeles County. In spite of protocol trapping efforts since 1998, the only confirmed MGS captures in Los Angeles County have been at several locations in a small area on Edwards Air Force Base (Leitner 2008). Northeastern Los Angeles County, especially the desert habitat surrounding the unincorporated community of Lake Los Angeles, has been identified as an important under-sampled area for the MGS (Leitner 2008, Figure 15). In May 2009, an MGS sighting with photographs in the Phacelia Wildlife Sanctuary (Jack Farley, Los Angeles County Dept. of Parks & Recreation) raised the possibility that the species might still be present on County properties in this area. The Mohave Ground Squirrel Technical Advisory Group (MGS TAG) has also identified northeastern Los Angeles County as a high priority for additional surveys (Phil Leitner, personal communication to LaRue).

Given this information, in March 2014 Circle Mountain Biological Consultants, Inc. (CMBC), for which I am one of two principals, secured six permits from the County of Los Angeles Department of Parks and Recreations (Department) authorizing us to perform exploratory trapping surveys for the MGS for a 10-year period (2014 through 2024) in the following County Parks: Alpine Butte Wildlife Sanctuary Park, Butte Valley Wildflower Sanctuary Park, Carl O. Gerhardy Wildlife Sanctuary Park, Mescal Wildlife Sanctuary Park, Phacelia Wildflower Sanctuary Park, and Thomas Payne Wildlife Sanctuary Park.

Access to study sites was made possible by permits issued by the Department. The permit fees were paid by California State University Stanislaus (CSU Stanislaus) using funding provided by a research grant from CDFW. This report, then, is written on behalf of the Department, CSU Stanislaus, and CDFW to provide them with the results of this investigation. It is intended to serve as a baseline study for the longitudinal monitoring of biological resources and habitat conditions within the Phacelia Sanctuary. Therefore, in addition to trapping results, we also report common and uncommon plant and animal species. We also performed a standardized disturbance analysis of observable human impacts, which will allow the Department to keep track of changing habitat conditions during the 10-year study period.

Figure 1. Grid Location Map (DeLorme Topo USA® 10.0)

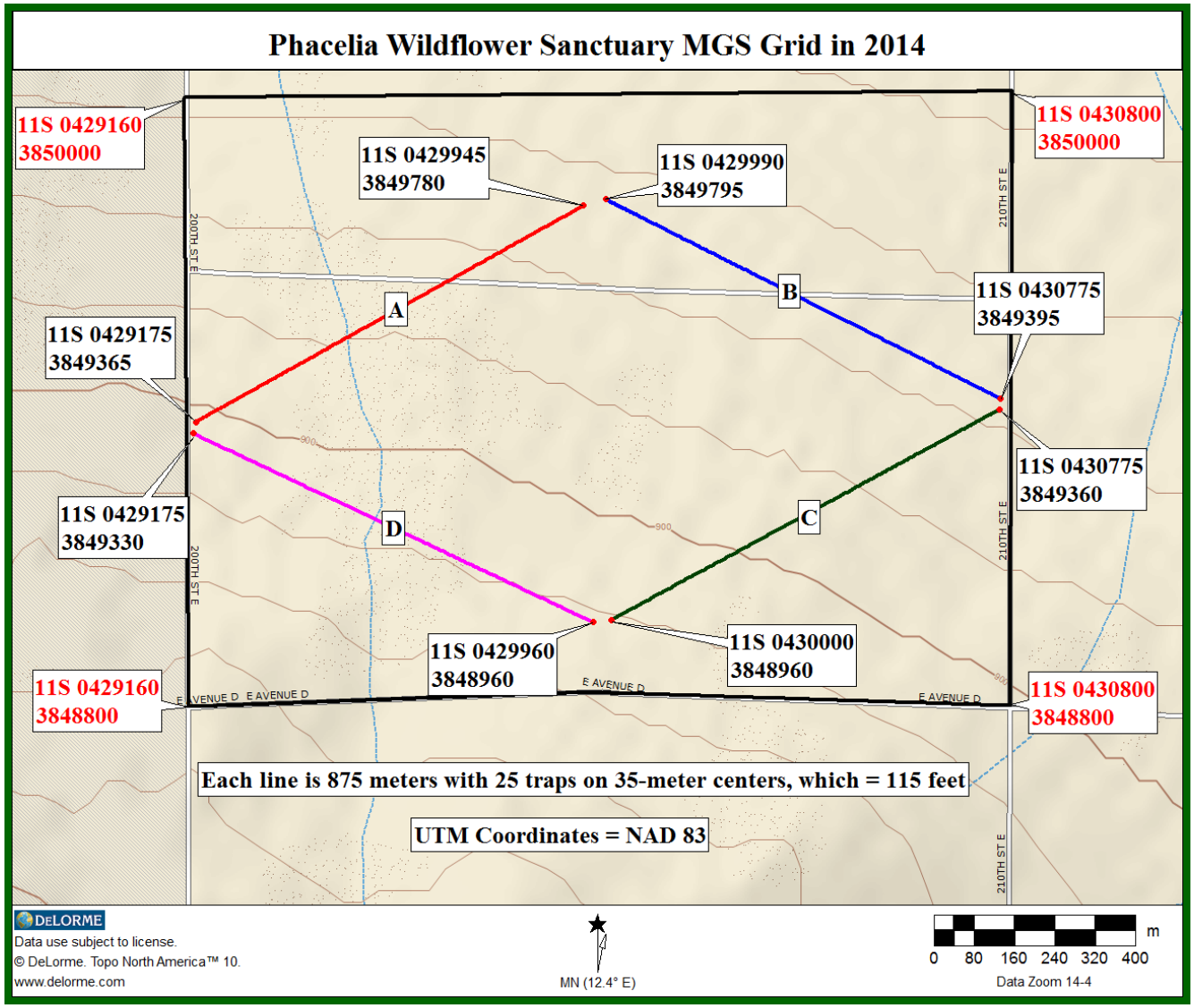


Figure 2. Aerial Overview of Phacelia Sanctuary (Google Earth)

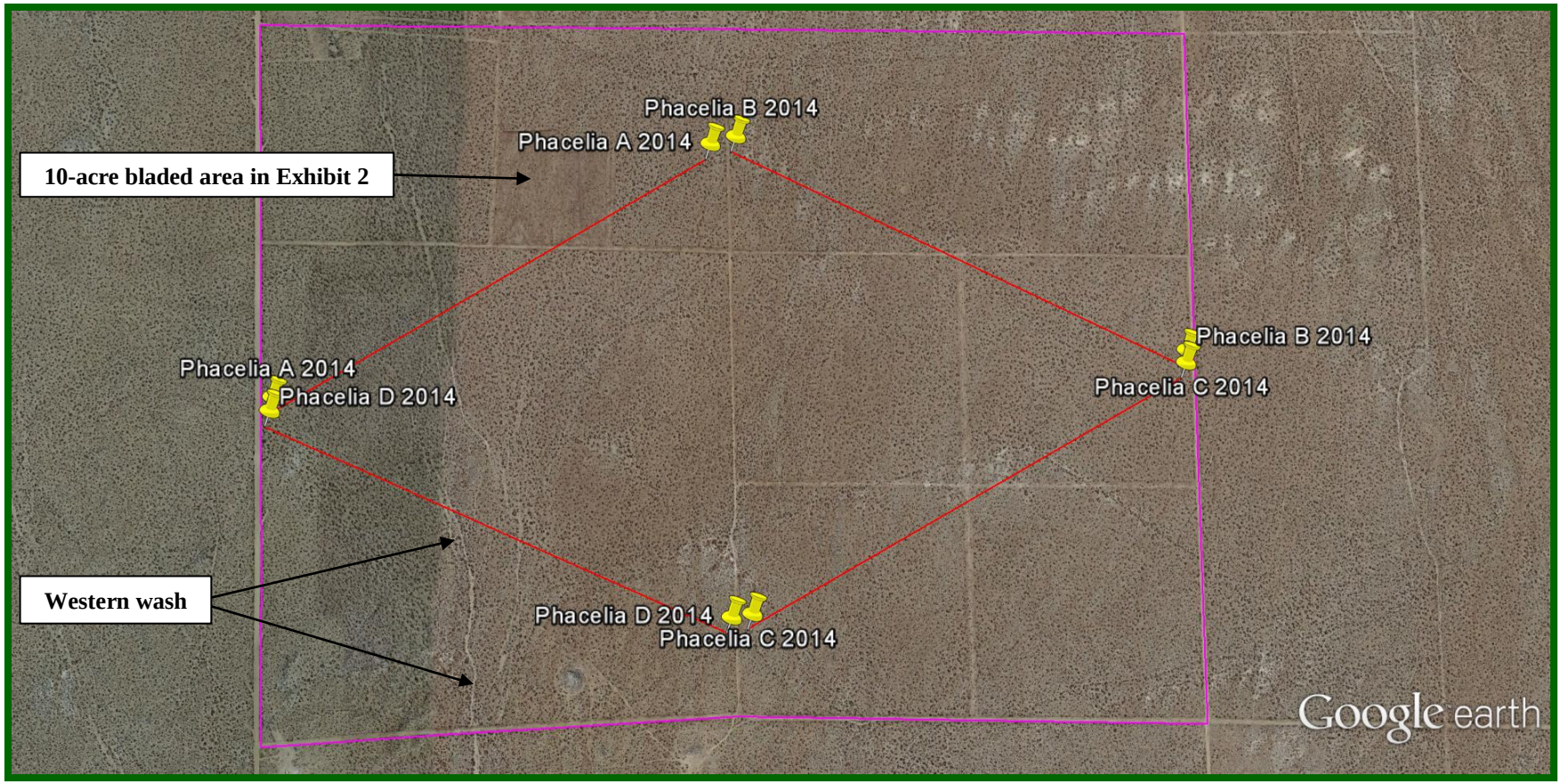
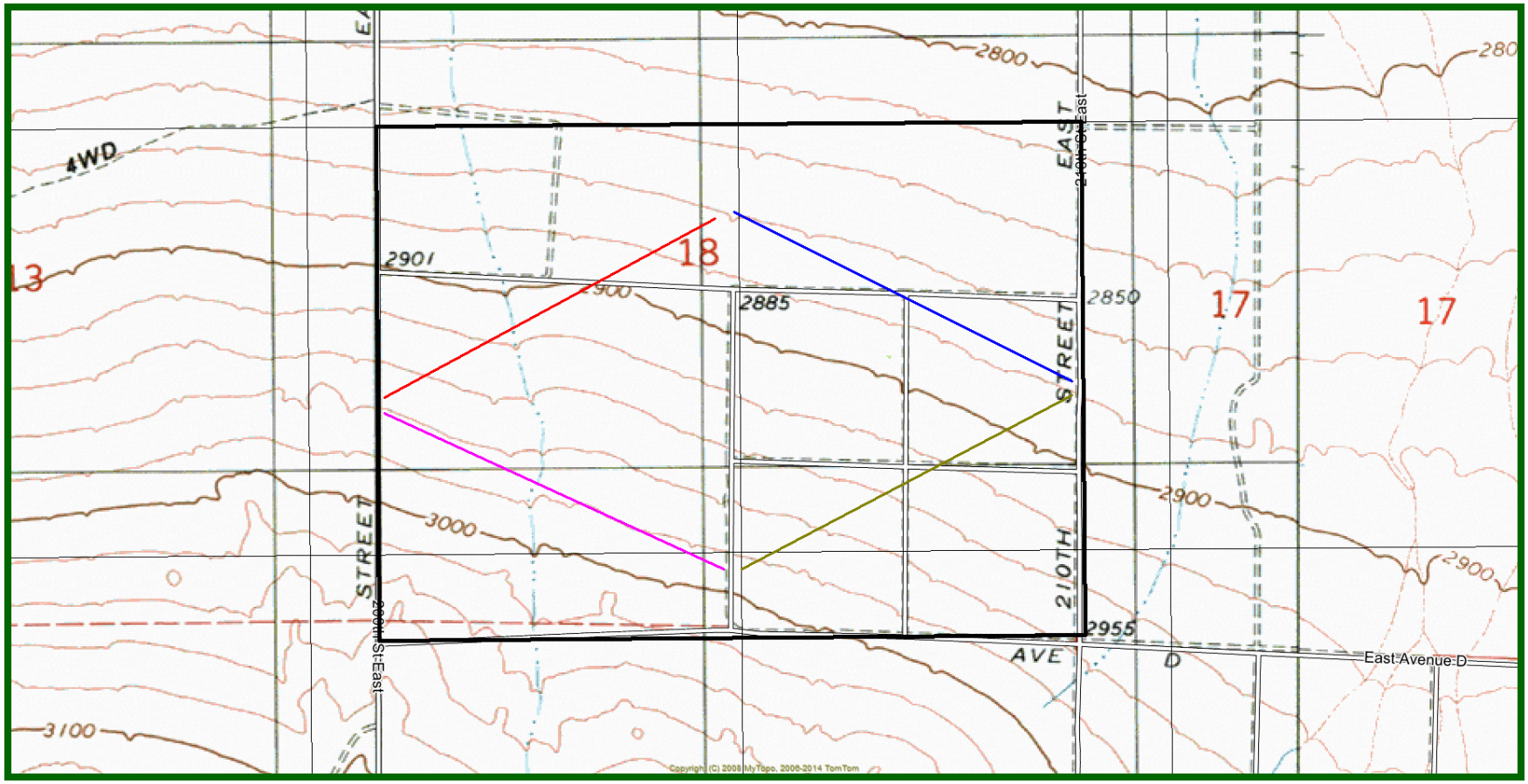


Figure 3. Grid Location on USGS Rogers Lake South 7.5' Quadrangle (Terrain Navigator)



The following location information is given for the Phacelia Sanctuary:

Location: Township 8 North, Range 8 West, Section 18, San Bernardino Base & Meridian

Quad map: U.S. Geological Survey Rogers Lake South 7.5' Quadrangle

UTM (NAD 83) coordinates at center of grid: 430000 East, 3849350 North

Acreage of subject property: 490 acres±

1.2. Mohave Ground Squirrel Life History Information. The MGS is approximately 20 to 23 centimeters (8 to 9 inches) in length, sandy-colored on top, lighter underneath, with a bi-colored (dark above, light below) tail flattened dorso-ventrally.

© Phil Leitner

The following information is published in various places (e.g., David Laabs' species account published in U.S. Bureau of Land Management 2005), and much of it was in the form of personal communication from Dr. Phil Leitner to LaRue. Following winters of sufficient rainfall [e.g., a minimum of about 7.5 centimeters (3 inches)], MGS emerge in February from dormancy, reproduce, and have a litter of up to nine young in late March to early April; they forego reproduction if there is less than about 3 inches of rainfall. If reproductive, they will remain active into the summer, with adults becoming dormant in June and July and juveniles as late as August; if there is no reproduction, adults will become dormant as early as late May. Their diet consists of seeds, leaves, flowers, and fruits of both annual and perennial plants; arthropods are occasionally taken. Their ability to overwinter depends on achieving a body weight of approximately 180 grams. The MGS is currently listed as Threatened by the California Fish and Game Commission; U.S. Fish and Wildlife Service (USFWS) has declined to list it federally following two petitions, the last of which was in 2005.

2.0. FIELD SURVEY METHODS

2.1. CDFW Standard Trapping Methods. Surveys were conducted, in part, according to the following recommended guidelines, with a few changes: California Department of Fish and Game (currently CDFW), Mohave Ground Squirrel Survey Guidelines (January 2003, revised in 2010). Whereas CDFW methods are intended for *protocol-level* surveys, the current study was more of an *exploratory* survey, so not all conditions were followed. In the following sections, the formal protocol-level method is given in regular font, followed by the implemented methodology shown in *italicized font* immediately following the particular prescription (for those measures that do not apply, "Not applicable" follows the prescription).

1. Visual surveys to determine Mohave ground squirrel activity and habitat quality shall be undertaken the period of 15 March through 15 April. All potential habitat on a project site shall be visually surveyed during daylight hours by a biologist who can readily identify the Mohave ground squirrel and the white-tailed antelope squirrel (*Ammospermophilus leucurus*) [and, more importantly, round-tailed ground squirrel (*Spermophilus tereticaudis*)]. *Not applicable.*

2. If visual surveys do not reveal presence of the Mohave ground squirrel on the project site, standard small-mammal trapping grids shall be established in potential Mohave ground squirrel habitat. The number of grids will depend on the amount of potential habitat on the project site, as determined by the guidelines presented in paragraphs 4 and 5 of these guidelines. *For this and all other surveys on County Parks, a single grid was established.*

3. For linear projects (for example, highways, pipelines, or electric transmission lines), each sampling grid shall consist of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) arranged in a rectangular pattern, 4 traps wide by 25 traps long, with traps spaced 35 meters apart along each of the four trap lines. At a minimum, one sampling grid of this type shall be established in each linear mile, or fraction thereof, of potential Mohave ground squirrel habitat along the project corridor. *This measure is not applicable, as none of the Parks is linear.*

4. For all other types of projects, one sampling grid consisting of 100 Sherman live-traps (or equivalent; the minimum length of any trap is 12 inches) shall be established for each 80 acres, or fraction thereof, of potential Mohave ground squirrel habitat on the project site. The traps shall be arranged in a 10 x 10 grid, with 35-meter spacing between traps.

Given the exploratory nature of this study, we chose a more widespread configuration for the 100 Sherman live traps (see Figures 1 though 3). This pattern was chosen using aerial photographs to assess the least disturbed portions of the site. It was also configured to cover as much of the site as possible with proximate beginning and ending points to facilitate a circuitous trap check by a single person.

5. Each sampling grid shall be trapped for a minimum five consecutive days, unless a Mohave ground squirrel is captured before the end of the five-day term on the grid or on another grid on the project site. If no Mohave ground squirrel is captured on a sampling grid on the project site in the first five-consecutive-day term, each sampling grid shall be sampled for a SECOND five-consecutive-day term. Trapping may be stopped before the end of the second term if a Mohave

ground squirrel is captured on any sampling grid on the project site. If no Mohave ground squirrel is captured during the second five-consecutive-day term, each sampling grid shall be sampled for a THIRD five-consecutive -day term. The FIRST trapping term shall begin and be completed in the period of 15 March through 30 April. If a SECOND term is required, it shall begin at least two weeks after the end of the first term, but shall begin no earlier than 01 May, and shall be completed by 31 May. If a THIRD term is required, it shall begin at least two weeks after the end of the second term, but shall begin no earlier than 15 June, and shall be completed by 15 July. All trapping shall be conducted during appropriate weather conditions, avoiding periods of high wind, precipitation, and low temperatures (<50°F or 10°C).

Dr. Leitner has established an exploratory method where a single grid is trapped for five consecutive days. As such, most of the above description does not apply to the current effort. Also, we did not stop when MGS was captured, as we were interested in studying the demographics of the animals, and particularly their reproductive status. Actual dates are reported herein. On the one day where temperatures exceeded 90°F, the traps were closed. The grid was still trapped for five days (i.e., 500 trap days), although not on five consecutive days.

6. For projects requiring two or more sampling grids, capture of a Mohave ground squirrel on any grid will establish presence of the species on the project site. Trapping may be stopped on all grids on the project site at that time. For linear projects, very large project sites, project sites characterized by fragmented or highly-heterogeneous habitats, or in other special circumstances, continued trapping may be necessary. *Not applicable.*

7. A maximum 100 traps shall be operated by each qualified biologist. Each trap shall be covered with a cardboard A-frame or equivalent non-metal shelter to provide shade. Trap and shelter orientation shall be on a north-south axis. All traps shall be opened within one hour of sunrise and may be closed beginning one hour before sunset. Traps shall be checked at least once every four hours to minimize heat stress to captured animals. When traps are open, temperature shall be measured at a location within the sampling grid, in the shade, and one foot (approx. 0.3 meters) above the ground at least once every hour. Traps shall be closed when the ambient air temperature at one foot above the ground in the shade exceeds 90°F (32°C). Trapping shall resume on the same day after the ambient temperature at one foot (approx. 0.3 meters) above the ground in the shade falls to 90°F (32°C) and shall continue until one hour before sunset. Suggested baits are mixed grains, rolled oats, or bird seed, with a small amount of peanut butter.

Most of these prescriptions were followed as given, including the number of traps, use of shade structures, closing at 90°F, trap orientation, and bait type. As reported in the tables below, we did use some discretion as to the beginning and ending of a particular trap day.

8. A qualified biologist shall complete the Survey and Trapping Form, which is found on page 5 of these guidelines. This biologist, or the lead agency for the project, shall submit the completed form to the appropriate Department [CDFW] office (see page 4) with the biological report on the project site.

This form and CMBC's comprehensive field data sheet are included at the end of this report in Appendix A. California Natural Diversity Data Base (CNDDB) forms are included in Appendix A, and were submitted to CDFW as required.

9. The Department [CDFW] may allow variation on these guidelines, with the advance written approval of the appropriate regional habitat conservation planning office (see page 4). Such variations could include biologically-appropriate modification of the trapping dates or changes in grid configuration that would enhance the probability of detecting Mohave ground squirrels. Any variation which concerns trapping or marking methods must be incorporated into the MOU or permit that authorizes the work.

Variations are given herein. Importantly, since MGS was trapped, I collected tissue samples from each of the five unique animals, which is authorized on my MOU. These tissues were provided to Dr. Marjorie D. Matocq, who collaborates with Dr. Leitner as part of their ongoing genetic studies on the MGS.

10. If a survey conducted according to these guidelines results in no capture or observation of the Mohave ground squirrel on a project site, this is not necessarily evidence that the Mohave ground squirrel does not exist on the site or that the site is not actual or potential habitat of the species. However, in the circumstance of such a negative result, the Department [CDFW] will stipulate that the project site harbors no Mohave ground squirrels. This stipulation will expire one year from the ending date of the last trapping on the project site conducted according to these guidelines. *Not applicable, as these sites are not intended for development.*

2.2. Project Specific Methods. The grid lines shown in Figures 1 through 3 were established in a clockwise manner, including Lines A, B, C, and D. Individual trap stations were numbered 1 through 25 with each number 1 station at the west end of each line. Since the Phacelia grid was aligned along an east-west axis, the first trap station at the west end of each line was identified as station 1 and the stations at the east ends were identified as station 25. If an animal was trapped at the fourth station on Line C, for example, that encounter was recorded as C4. Although not required by CDFW methods, we marked each squirrel with a wide felt-tipped marker, first on the right rear flank and again on the left rear flank if trapped a second time; no new marks were applied after the second mark. If not identified as “Recap 1” or “Recap 2,” all records are for new animals. Data for all trapped squirrels (and other species) were recorded at the station where they were caught, measurements taken (i.e., weight, sex, reproductive and capture statuses for squirrels), and then released. Photographs were taken of each MGS. Abbreviations used in Table 1 for each species captured are defined following the table.

In addition to determining if the MGS occurs on Phacelia, we collected other biological baseline data that may be useful to the Department and CDFW. As such, Appendix B includes a cumulative list of plants observed during the study and Appendix C includes the animals observed. Assuming a given site will be trapped more than one year, the year is indicated (e.g., “14” for “2014”) in the left margin. Photographs (see Figure 5 in Appendix D) were taken in the following order along the grid: Exhibit 1 = Grid Line A, from its beginning to its end; Exhibit 2 = Grid Line A, from its end to its beginning; etc. As such, a total of eight photographs was taken within the grid following this pattern. Additional photographs were taken elsewhere within the Park, the locations of which are also shown in Figure 5.

On 5/14/2014, I tallied observable human disturbances along the grid lines, including all human impacts observed within approximately 8 meters (25 feet) either side of the transect. On 5/17/2014, I surveyed a single meandering transect outside the grid lines to identify and map special status resources. As shown in Figure 4, I inadvertently went beyond the northern boundary, which is not marked by a road.

3.0. RESULTS

3.1. Site Description and Location. The following information was determined at the time the site was trapped.

Habitat Description: The site is vegetated by Mojavean creosote bush scrub. With 15 perennial shrub, grass, and succulent species observed, the site has a moderate-to-high level of perennial diversity. Of the 35 plant species observed, only 5 (14%) are not native to California. There is a wash running south-to-north through the western quarter of the site where ground cover is more dense than upland portions of the site; cheesebush (*Ambrosia salsola*), peach thorn (*Lycium cooperi*), and creosote bush rings are relatively more common along this wash than other areas surveyed.

Dominant annuals: California goldfields (*Lasthenia californica*), fiddleneck (*Amsinckia tessellata*), and split-grass (*Schismus* sp.) were the dominant annuals detected during the survey.

Dominant perennials: Creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), and Nevada joint-fir (*Ephedra nevadensis*) were the dominant perennials.

Other: Although there are at least 13 other perennial species present, a majority of the individual plants are creosote bush and burrobush, so the ground cover provided by the other species is insubstantial. Other perennials that occur include peach thorn (*Lycium cooperi*) and Anderson's box-thorn (*Lycium andersonii*); desert goldenhead (*Acamptopappus sphaerocephalus*); Cooper's goldenbush (*Ericameria cooperi* var. *cooperi*), desert needlegrass (*Achnatherum speciosum*), and Mojave aster (*Xylorhiza tortifolia*) in rockier places; and cheesebush (*Ambrosia salsola*) along the main wash. Only four or five Joshua trees (*Yucca brevifolia*) and silver chollas (*Cylindropuntia echinocarpa*) were observed.

At his long-term study sites in the Coso Range of China Lake Naval Air Weapons Station near the northern extent of the MGS range, Dr. Leitner has determined that winter fat (*Krascheninnikovia lanata*) and spiny hop-sage (*Grayia spinosa*) are important perennial plants for the feeding ecology of the MGS, particularly during dry years. Although neither of these species was observed along the grid, I observed 27 winter fat shrubs and 3 spiny hop-sage shrubs along the meandering transect depicted in Figure 4. These plants were not widely scattered in areas surveyed; rather, they were clumped in three distinct areas at the southwest corner, just east of the blueline stream in Figure 4 along the south boundary, and just north of the site.

Qualitative description of plant germination: It appears from the density of California goldfields and fiddleneck that there was an above-average bloom of at least these two annuals. Creosote bushes were also fruiting at the time of the survey.

Land form: Desert plain **Slope:** 1-3% **Aspect:** East-Northeast

Soil type: Decomposed granite with boulders and rock outcrops in places (see Exhibit 10).

Elevational range: 936 meters (3,070 feet) at the southwest corner down to 858 meters (2,815 feet) at the northeast corner.

Total Acres Trapped: Although the site is 490 acres±, assuming a grid length of 11,480 linear feet (3,500 meters) and an effective width of 150 feet (45 meters) either side of the grid line (300 feet or 90 meters), the total acres trapped is estimated to be approximately 80 acres (11,480 linear feet X 300 feet ÷ 43,560 square feet) of the 490-acre site.

Number of trap days (number of days x 100 traps): 500

Dates of trapping session: Grid was set up on the evening of 5/12/2014 and subsequently trapped on 5/13, 5/14, the morning of 5/15 (traps were closed between 0930 and 1040 when temperatures went from 90°F up to 97°F in that hour, and not reopened that day), 5/17, and 5/19 when the traps were removed from the site.

Trapping conducted by: Ed LaRue on 5/13, 5/14, 5/15, 5/17, 5/19; Sharon Dougherty on 5/19; and Patricia Seamount on 5/19.

3.2. Other Special Status Species. As shown in Figure 4, four special status species were either observed or detected both along the grid and in adjacent areas during the five-day survey in May 2014; a fifth was observed south of the site that is not mapped. These encounters were not as structured as the disturbance analysis described below (e.g., if I observed an elevated mound that may be the apron to a tortoise burrow, I inspected it rather than stay on a specific transect and record only objects within a certain distance).

Creosote bush rings greater than 10 feet in diameter (see example in Exhibit 11) are considered by San Bernardino County in their Development Code to be a protectable biological resource, as per Section 88.01.060(c) Regulated Desert Native Plants. As shown in Figure 4, a total of 36 creosote rings was observed and mapped. They appear to be distributed throughout the site, perhaps more common on the western half, and definitely more common along the western wash.

Desert tortoise (*Gopherus agassizii*) is listed as a Threatened species by both the CDFW and USFWS. I observed (in descending order of prevalence) five fresh scat of an adult tortoise deposited together near the southeastern corner of the site; three burrows of adult tortoises, including one adjacent to Line D of the grid and two just north of the Sanctuary; two older scat of an adult tortoise, which were within several 100 feet of the Line D burrow; and, found in a wood rat midden, the partial remains of an adult tortoise that died from unknown causes more than four years ago.

American badger (*Taxidea taxus*) is not designated by the USFWS but is considered a Species of Special Concern by the CDFW. Given their digging habits in search of small burrowing mammals, badgers leave behind characteristic "pot holes," which are 20 to 25 centimeters (8 to 10 inches) in diameter, nearly vertical, and when very recent may still show widely-spaced claw marks around the sides. Ten such digs were observed throughout the site.

Kit fox (*Vulpes macrotis*) is not designated by the USFWS but as a fur-bearing mammal, is considered a Fully Protected species by the CDFW. A single active kit fox den, possibly a natal den where young were raised, was observed near the east end of Line A. Kit fox scat were not mapped but observed throughout the area, including several that were deposited on the tops of the cardboard shades covering the traps.

Prairie falcon (*Falco mexicanus*) is designated as a Bird of Conservation Concern by the USFWS and is a Watch List species for the CDFW. Likely the same bird was observed on three different days as I accessed the site along 200th Street East. On two occasions, it was observed on a wooden telephone pole approximately two miles south of the site, and on the final encounter was observed on a pole approximately one mile to the south. As a relatively wide-ranging species, it is possible that this or other prairie falcons may occasionally forage on the subject property (although the pole line does not extend as far north as the Sanctuary).

3.3. Observable Human Impacts. On 5/14/2014, I tallied observable human disturbances found within approximately 8 meters (25 feet) either side of the grid line and inclusive of the gaps between the ends of the lines. The results of this method provide *encounter rates* for observable human disturbances. For example, if a single motorcycle trail was observed three times during the survey, it would be tallied three times (this relieves the observer from interpreting the same versus different objects). The intent of this exercise is to develop a baseline for human use on the site so that if it is trapped in subsequent years, a comparison may be made to see if those uses are increasing, decreasing, or remain unchanged.

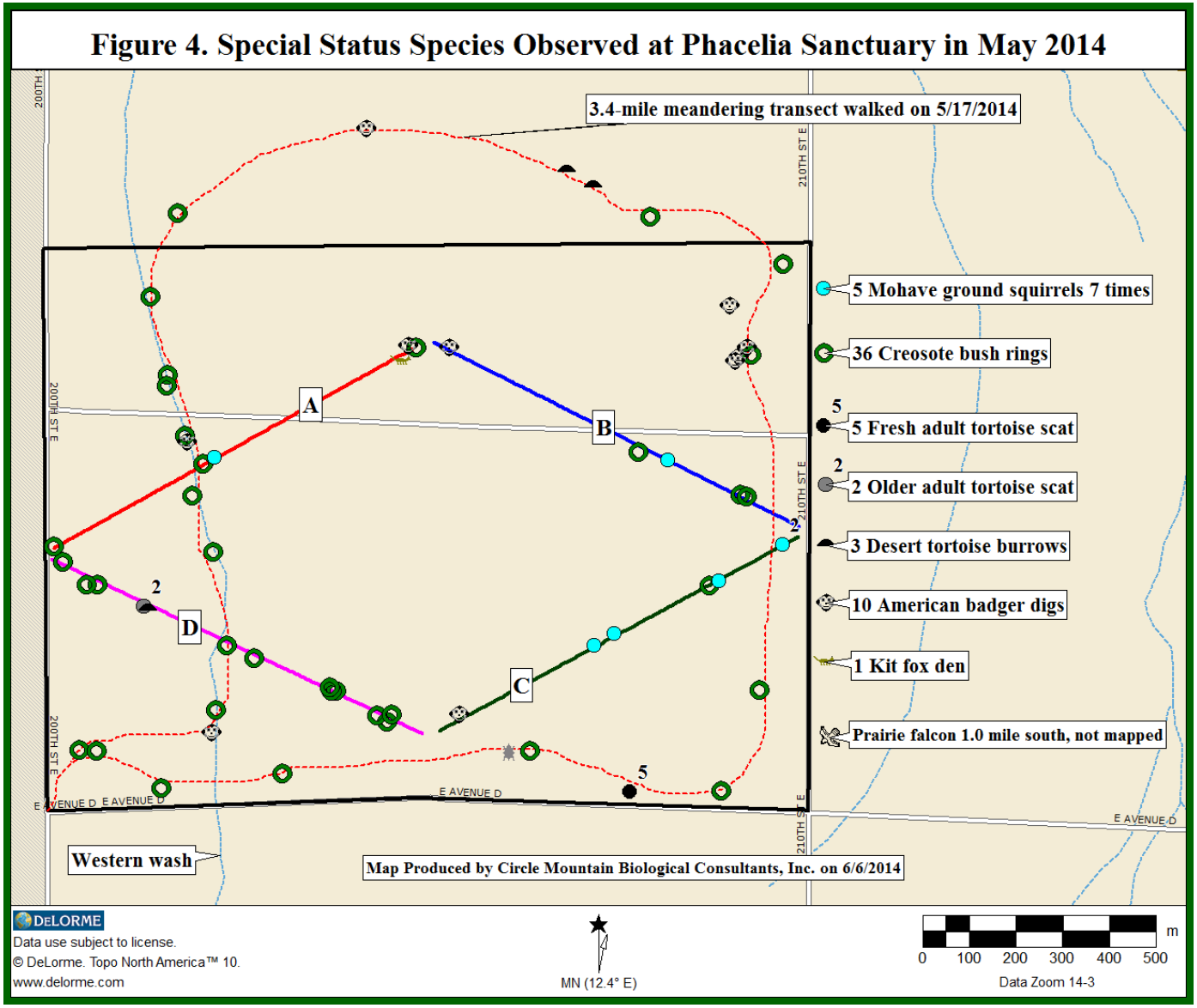
TABLE 1. OBSERVABLE HUMAN DISTURBANCES FOR MAY 2014

Debris and Litter	Military Ordinance	Vehicle Trails	Vehicle Tracks	Shooting Targets	Shotgun Shells	Rifle Shells
23	7	5	2 cycle 0 truck	2	1	1

Based on two decades of performing disturbance analyses, I consider this site to be nearly pristine with few of the many disturbances observed throughout the desert. The disturbances observed along the grid lines are representative of the types of disturbances observed throughout the site along the meandering transect. Except for miscellaneous debris, the disturbances may be broadly characterized as vehicle- and shooting-related.

I have performed numerous disturbance analyses on military bases, and recognized seven pieces of metal as being military-related, presumably from Edwards Air Force Base, which is indicated as the light blue area in Figure 4 along the west boundary of the site. There were only several established motorcycle trails on the site and bikers are remaining on these trails, as evidence by only two cross-country motorcycle tracks observed (no truck or all-terrain vehicle tracks were observed). The types of debris and litter observed included soda cans (8), glass (4), balloons (4), wind-blown paper (3), metal debris (2), and a discarded battery and piece of rubber (1 each), most of which were proximate to 200th Street East along the west boundary and 210th Street East along the east boundary. Shooting occurs but is very light; both targets were perforated metal.

There are also disturbances that do not lend themselves to this analysis. For example, there was evidence of domestic sheep grazing throughout the site, although it is very old and did not appear to be as heavy as many places in the western part of the West Mojave Desert. There is also a 10-acre area near the eastern end of Line A where the vegetation has been mechanically removed and there has been little recruitment of perennial shrubs (indistinctly visible in Figure 2; see Exhibit 2 for a photograph). Finally, rather than count unimproved roads through the site, we rely on the aerial photograph in Figure 2, which shows four graded roads on the east half of the site, a ¼-mile bladed road to the northwest, and graded roads along the south, east, and west boundaries. Interior roads were not heavily used, and several were not recently used.



(Although it was my intent to remain on the site, once the data were mapped, I found that I went a little north, as mapped by the dashed red line).

3.4. Trapping Results.

The grid was set up by Ed LaRue and Sharon Dougherty on the evening of 5/12/2014, in anticipation of trapping over the next five days. Trapping occurred on 5/13/2014 and 5/14/2014 but was stopped early on 5/15/2014 due to temperatures exceeding 90°F, which persisted on 5/16/2014, so the grid was not trapped. Trapping resumed on 5/17/2014, was skipped on 5/18/2014 while extra tissue-collection supplies were delivered by Dr. Leitner, and concluded on 5/19/2014. Table 2 includes information about the dates and times of trapping; numbers and types of animals captured; and weather conditions during the five trapping days.

TABLE 2. TRAPPING RESULTS FOR MAY 2014

DATE	*TIME	**TEMP °F	CAPTURES			Cloud Cover		Max Wind speed (mi/hr)	
			AGS	MGS	***Other	AM	PM	**AM	PM
5/13/14	0700	66	11	0	1 WWTA	2%	0%	0-5	5-10
	1930	80							
5/14/14	0715	68	11	**1 new**	1 DSLI	0%	0%	5-10	5-10
	1940	86							
5/15/14	0705	66	3	0	2 WWTA	0%	0%	0-5	0-5
	1040	90+							
5/17/14	0610	68	8	**3 new**	1 WWTA 1 CAGS	75%	60%	10-15	10-15
	1840	89							
5/19/14	0715	58	7	**1 new** **2 recaps**	0	0%	0%	10-15	15-20
	1745	74							
5 Days	**0610 - 1940**	**58 - 97**	**40**	**5 new** **2 recaps**	**4 WWTA** **1 DSLI** **1 CAGS**	**0 – 75%**	**0 – 60%**	**0-15 mph**	**0-20 mph**

*- The upper times given in column 2 are when the first trap was opened each day, with the lower times indicating when the last trap was closed each day.

**- Air temperatures measured 12" above the ground in new shade and maximum wind speeds were measured by a hand-held Kestrel® device at the indicated times.

***- Abbreviations for all animals trapped given in the 4th, 5th and 6th columns include:
AGS = Antelope ground squirrel (*Ammospermophilus leucurus*)
CAGS = California ground squirrel (*Otospermophilus beecheyi*)
DSLI = Desert spiny lizard (*Sceloporus magister*)
MGS = Mohave ground squirrel (*Xerospermophilus mohavensis*) highlighted in blue
WWTA = Western whiptail (*Cnemidophorus tigris*)

As reported above in Table 2, we successfully trapped five MGS a total of seven times. Given the distribution and age of the squirrels (and interpretations provided by Dr. Leitner), we conclude that the 120g non-reproductive female captured at Station A11 on 5/14 was probably an adult. The 119g, post-lactating female caught on two occasions, first at Station C13 on 5/17/2014 and again at Station C11 on 5/19, was likely the mother of the litter of three juvenile MGS captured in the adjacent traps. These juveniles included an 88g non-scrotal male trapped at Station C24 on 5/17; 101g non-reproductive female at C20 on 5/17; 100g non-reproductive female at C24 on 5/19; and a juvenile female recaptured at B22 on 5/19. One can see that we also trapped (in descending order of prevalence) 40 antelope ground squirrels, 4 western whiptails, 1 desert spiny lizard, and 1 California ground squirrel.

4.0. CONCLUSIONS

We are pleased to report that Mohave ground squirrels occur on the subject property as of May 2014. Dr. Leitner and a colleague trapped a standard grid along the western boundary of the site in 2008 but did not capture any MGS. However, in May 2009, Mr. Jack Farley (Los Angeles County Department of Parks and Recreation) took photographs of a female MGS along the eastern boundary of the Sanctuary. The current effort, then, confirms that MGS is persisting in this area. As indicated above, this is a significant finding, in that it confirms that MGS still occurs in northeastern Los Angeles County outside Edwards Air Force Base.

5.0 RECOMMENDAIONS

There may be grid configurations that would be better suited to trap a given site. In this case, if the grid were repositioned 100 meters to the south it would avoid the barren 10 acres on which 3 of the 100 traps occurred. Otherwise, the east-west axis is best for this site and there are no other non-habitat areas to be avoided.

This particular Sanctuary harbors a number of special status species and in its current condition, is considered to be nearly pristine. Given the relative lack of observable human disturbances, we have no particular recommendations to the Department regarding its future management. Fortunately, for now, bikers are staying on the several unofficial trails bisecting the site (Exhibit 16). If these 2-3-foot wide trails were closed, it may result in more cross-country vehicle travel than presently occurs.

6.0. REFERENCES AND LITERATURE CITED

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7.0. ACKNOWLEDGEMENTS

This is a volunteer effort, aided by funding from CDFW to pay the use permit fees required by the Los Angeles County Department of Parks and Recreation. We are indebted to Dr. Phil Leitner for helping with the logistics, facilitating permit acquisition, and reviewing the early draft of this report. Thanks also to Dr. Scott Osborn and Justin Garcia of the CDFW for supporting this effort and expediting issuance of trapping permits. Natasha Robinson of the Department of Parks and Recreation was very helpful and responsive in facilitating the issuance of the six permits. We'd also like to thank ranger, Jean Rhyne and camp host, Suzie Playter, of California State Parks for accommodating us at Saddleback Butte State Park during trapping. Finally, thanks to my partner Sharon Dougherty and Patricia Seamount for helping me assemble, trap, and disassemble the grids.

APPENDIX A. CDFW SURVEY AND TRAPPING FORM

Mohave Ground Squirrel (MGS) Survey and Trapping Form (photocopy as needed)

PART I - PROJECT INFORMATION (use a separate form for each sampling grid)

Project name: Phacelia Wildflower Sanctuary Property owner: L.A. County

Location: Township 8N; Range 8W; Section 18; ¼ Section S½

Quad map/series: Rogers Lake South UTM coordinates: 430000 E / 3849400 N center (NAD 83)
GPS coordinates of trapping-grid corners

Acreage of Project Site: +/- 490 acres Acreage of potential MGS habitat on site: 490 acres

Total acreage visually surveyed on project site: See report Date(s): N/A
visual surveys

Visual surveys conducted by: Ed Cafuel
names of all persons by date (use back of form, if needed)

Total acres trapped: 80 acres Number of sampling grids: 1

Trapping conducted by: Ed Cafuel, Sharon Dougherty, Patricia Seamount
names of all persons by sampling term and sampling grid (use back of form, if needed)

Dates of sampling term(s): FIRST 5/13-19/2014 SECOND N/A (if required) THIRD N/A (if required)

PART II - GENERAL HABITAT DESCRIPTION (use back of form, if needed)
Vegetation: dominant perennials: Creosote bush, Bundush, Nevada, Joint-fir
other perennials: Anderson's Boxthorn, Peach thorn, Desert yellowhead
dominant annuals: California goldfield, fiddleneck, split grass

other annuals: Red-stemmed filaree, Red brome, Phacelia ssp.

Land forms (mesa, bajada, wash): Desert Plain

Soils description: Decomposed granite

Elevation: 930m ↓ 858m Slope: 1-3%

PART III - WEATHER (report measurements in the following categories for each day of visual survey and each day of trapping; using 24-hour clock, indicate time of day that each measurement was made; use a separate blank sheet for each day) See report

Temperature: AIR minimum and maximum; SOIL minimum and maximum; Cloud Cover: % in AM and % in PM; Wind Speed: in AM and in PM

CUMULATIVE FIELD DATA SHEET OF SIGNIFICANT OBSERVATIONS

Page __ of __

JOB #/NAME	DATE	DRIVE TIME TO	DRIVE TIME FROM	MILES	FIELD TIME BEGIN	FIELD TIME END	SURVEYORS
Phacelia MGS Trap	5/13-18/ 2014						Ed LaRue

WEATHER CONDITIONS (Start/End)

TEMP: °F WIND X: ↑ N S E W CLOUD: %

TEMP: °F WIND X: ↑ N S E W CLOUD: %

UTM (NAD 27) (circle starting corner)

NE→	NW→	SE→	SW→
430800	429160	430800	429160
3850000	3850000	3848800	3848800

SOILS: Decomposed Granite

ADJACENT LAND USE: Edwards Air Force Base W+N, private open elsewhere

VEGETATION HEIGHT(S): 2-6' Creosote Bush Scrub

PERENNIAL PLANTS				ANNUAL PLANTS				BIRDS		HERP	MAM
Jet sp.	Eri Inf			Amj Tes	Hem Mur			HALA		SBLZ	AmBA (XSJO)
Amb Sal				Las Cal				CORA		WNJA	KrT
Yuc Bre				Ero Cic				BISP		DHLL	PoHA
Amb Dum				Men Hib				RTHA		DESI	CoyT
Lar Tri				Bro Mad				MOD		DETO	Bobc
Eri Coo				Sch sp.				SASP		MDRG	DuRT
Eri Fas				Pha (Gre)				GRRR		LNLL	AKS
Luc And				Cro Bre				RoWR			MGS
Acam sp				Emi Las				BAOWL			CATS
Ach Spe				Eri Ere				BASW		Photographs	
Cyl Ech				Lep Las				BUEM			
Ely Ely				Eremn				HOFI			
Xyl Tor				Rosec				NOOR			
Pen Mer				Cym Mic				PRFA	Im'S		
Kra Lan	(27)			Ero Tec							
Gra spi	(3)			Nem Man							
Luc Cro				Phacen							

Creosote Ramp > 10 feet

OBSERVABLE HUMAN DISTURBANCES

American Badger

T#	East	North	OHV	Road	Dog	Dump	S Gun	Rifle	Target		
9197	9331	9230	8930	DETO	2MT/18	9370	9235			9939	9787
0646	9464	9267	8927	(B) 240	x0.2 Excl	9380	9227			30026	9782
0661	9459	9663	8877	(C) Adult	Hyrdo	30147	8918			0045	9757
0579	9271	30192	8921	5T/18	0405	8833				0041	8999
9887	8986	0600	8833	(B) 210	Good	0339	30122			0662	9778
9866	8998	0685	9046	(B) 230	Excl	0282	0155			0637	9748
9779	9051	0742	9954							0627	9866
9769	9052	0672	9762							9852	0250
9272	9282	0458	50057							9465	9585
9999	9539	9448	0073							9512	8964
9956	9783	9389	9896								
0430	9556	9425	9728								
9897	9000	9423	9706								
9766	9060	9461	9598								
9604	9122	9475	9471								
9546	9151	9519	9350								
9249	9283	9522	9014							9923	9753 } Same
9178	9364	9405	8847							9924	9749

TKA Fx Dry

Mail to:
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Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 05/19/2014

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Xerospermophilus mohavensis*

Common Name: Mohave ground squirrel

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 5 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397

E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information

Phenology: 75 % vegetative, 0 % flowering, 50 % fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
1	4			

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of L.A. Dept. of Parks and Rec.
Quad Name: Rogers Lake South Elevation: 900 meters
T 8N R 8W Sec 18, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy 2? meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☑ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: 430000 East / 3849400 North

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Creosote bush scrub with about 15 perennial shrubs, succulents, and grasses. Creosote bush, burro bush, and Nevada joint-fir dominants. Decomposed granite with a slope of 1-3% and northeastern aspect.

Live-trap single post-lactating female, three of her young, and another young female, likely dispersing through the site.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use:
Visible disturbances: Few motorcycle tracks and minimal shooting
Threats: None
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☑ no ☐

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Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/19/2014

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California Native Species Field Survey Form

Send Form

Scientific Name: *Gopherus agassizii*

Common Name: Desert tortoise

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals None Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397
E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information

Phenology: 75 % vegetative, 0 % flowering, 50 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☑ burrow site ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of L.A. Dept. of Parks and Rec.
Quad Name: Rogers Lake South Elevation: 900 meters
T 8N R 8W Sec 18, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: **NAD27** ☐ **NAD83** ☑ **WGS84** ☐ Horizontal Accuracy 2? meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☑ ***OR*** Geographic (Latitude & Longitude) ☐
Coordinates: 430000 East / 3849400 North

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Creosote bush scrub with about 15 perennial shrubs, succulents, and grasses. Creosote bush, burro bush, and Nevada joint-fir dominants. Decomposed granite with a slope of 1-3% and northeastern aspect.

Tortoise sign included 7 scat, 3 burrows, and 1 carcass.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use:
Visible disturbances: Few motorcycle tracks and minimal shooting
Threats: None
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☑ no ☐

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Source Code _____ Quad Code _____
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EO Index No. _____ Map Index No. _____

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California Native Species Field Survey Form

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Scientific Name: *Taxidea taxus*

Common Name: American badger

Species Found? ☐ Yes ☑ No _____ If not, why?

Total No. Individuals None Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397
E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information
Phenology: 75 % vegetative, 0 % flowering, 50 % fruiting

Animal Information
_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☑ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of L.A. Dept. of Parks and Rec.
Quad Name: Rogers Lake South Elevation: 900 meters
T 8N R 8W Sec 18, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy 2? meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☑ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: 430000 East / 3849400 North

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Creosote bush scrub with about 15 perennial shrubs, succulents, and grasses. Creosote bush, burro bush, and Nevada joint-fir dominants. Decomposed granite with a slope of 1-3% and northeastern aspect.

Positive evidence of American badger included 10 diagnostic digs.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use:
Visible disturbances: Few motorcycle tracks and minimal shooting
Threats: None
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☑ no ☐

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Scientific Name: *Falco mexicanus*

Common Name: Prairie falcon

Species Found? ☑ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☑ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☑ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Ed LaRue
Address: P.O. Box 3197, Wrightwood, CA 92397
E-mail Address: ed.larue@verizon.net
Phone: (760) 249-4948

Plant Information
Phenology: ____% vegetative ____% flowering ____% fruiting

Animal Information
1 # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: County of L.A. Dept. of Parks and Rec.
Quad Name: Rogers Lake South Elevation: 940 meters
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): GPS
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ GPS Make & Model Garmin
DATUM: NAD27 ☐ NAD83 ☑ WGS84 ☐ Horizontal Accuracy 2? meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☑ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: 429150 East / 3846980 North

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Creosote bush scrub with about 15 perennial shrubs, succulents, and grasses. Creosote bush, burro bush, and Nevada joint-fir dominants. Decomposed granite with a slope of 1-3% and northeastern aspect.

Single adult prairie falcon observed on three different days between 5/13 and 5/19/2014, alway sitting on wooden telephone pole.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☑ Excellent ☐ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use:
Visible disturbances: Few motorcycle tracks and minimal shooting
Threats: None
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☑
Habitat	☐	☐	☑
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☑ no ☐

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APPENDIX B. PLANT SPECIES DETECTED

The following plant species were identified on-site during the trapping survey described in this report. Those plant species that are protected by San Bernardino County and/or State ordinances are highlighted in red and signified by "(SC)" following the common name.

GNETAE	GNETAE
Ephedraceae	**Joint-fir family**
14 *Ephedra nevadensis*	Nevada joint-fir
ANGIOSPERMAE: DICOTYLEDONES	DICOT FLOWERING PLANTS
Asteraceae	**Sunflower family**
14 *Acamptopappus sphaerocephalus*	Desert goldenhead
14 *Ambrosia dumosa*	Burrobush
14 *Ambrosia salsola*	Cheesebush
14 *Ericameria cooperi* var. *cooperi*	Cooper's goldenbush
14 *Lasthenia californica*	California goldfields
14 *Xylorhiza tortifolia*	Desert aster
Boraginaceae	**Borage family**
14 *Amsinckia tessellata*	Fiddleneck
14 *Cryptantha micrantha*	Forget-me-not
Brassicaceae	**Mustard family**
14 *Guillenia lasiophylla*	California mustard
14 *Lepidium lasiocarpum*	Sand peppergrass
Cactaceae	**Cactus family**
14 *Cylindropuntia echinocarpa*	Silver cholla (SC) (only 5 tallied)
Chenopodiaceae	**Goosefoot family**
14 *Grayia spinosa*	Spiny hop-sage (3)
14 *Krascheninnikovia lanata*	Winter fat (27)
Geraneaceae	**Geranium family**
14 **Erodium cicutarium*	Red-stemmed filaree
Hydrophyllaceae	**Water-leaf family**
14 *Nemophila menziesii*	Baby blue eyes
14 *Phacelia* c.f. *crenulata*	Purple phacelia
14 *Phacelia tanacetifolia*	Phacelia
Loasaceae	**Stick-leaf family**
14 *Mentzelia albicaulis*	Little blazing star

Papaveraceae	**Poppy family**
14 *Eschscholzia minutiflora*	Little gold-poppy
Polemoniaceae	**Phlox family**
14 *Eriastrum eremicum*	Woolly star
Polygonaceae	**Buckwheat family**
14 *Chorizanthe brevicornu*	Brittle spineflower
14 *Eriogonum fasciculatum*	California buckwheat
14 *Eriogonum inflatum*	Desert trumpet
Solanaceae	**Nightshade family**
14 *Lycium andersonii*	Anderson's box-thorn
14 *Lycium cooperi*	Peach thorn
Zygophyllaceae	**Caltrop family**
14 *Larrea tridentata*	Creosote bush
ANGIOSPERMAE: MONOCOTYLEDONES	MONOCOT FLOWERING PLANTS
Liliaceae	**Lily family**
14 *Yucca brevifolia*	Joshua tree (SC) (only 3-4 observed)
Poaceae	**Grass family**
14 *Achnatherum speciosum (Stipa speciosa)*	Desert needlegrass
14 **Bromus madritensis* ssp. *rubens*	Red brome
14 **Bromus tectorum*	Cheat grass
14 *Elymus elymoides*	Squirreltail
14 **Hordeum murinum*	Hare barley
14 *Poa secunda*	Fowl bluegrass
14 **Schismus* sp.	Split-grass

* - indicates a non-native (introduced) species.
c.f. - compares favorably to a given species when the actual species is unknown.

Some species may not have been detected because of the seasonal nature of their occurrence. Common names are taken from Beauchamp (1986), Hickman (1993), Jaeger (1969), and Munz (1974).

APPENDIX C. ANIMAL SPECIES DETECTED

The following animal species were detected during the general biological inventory described in this report. Special status animal species are highlighted in red and signified by "(SC)" following the common names.

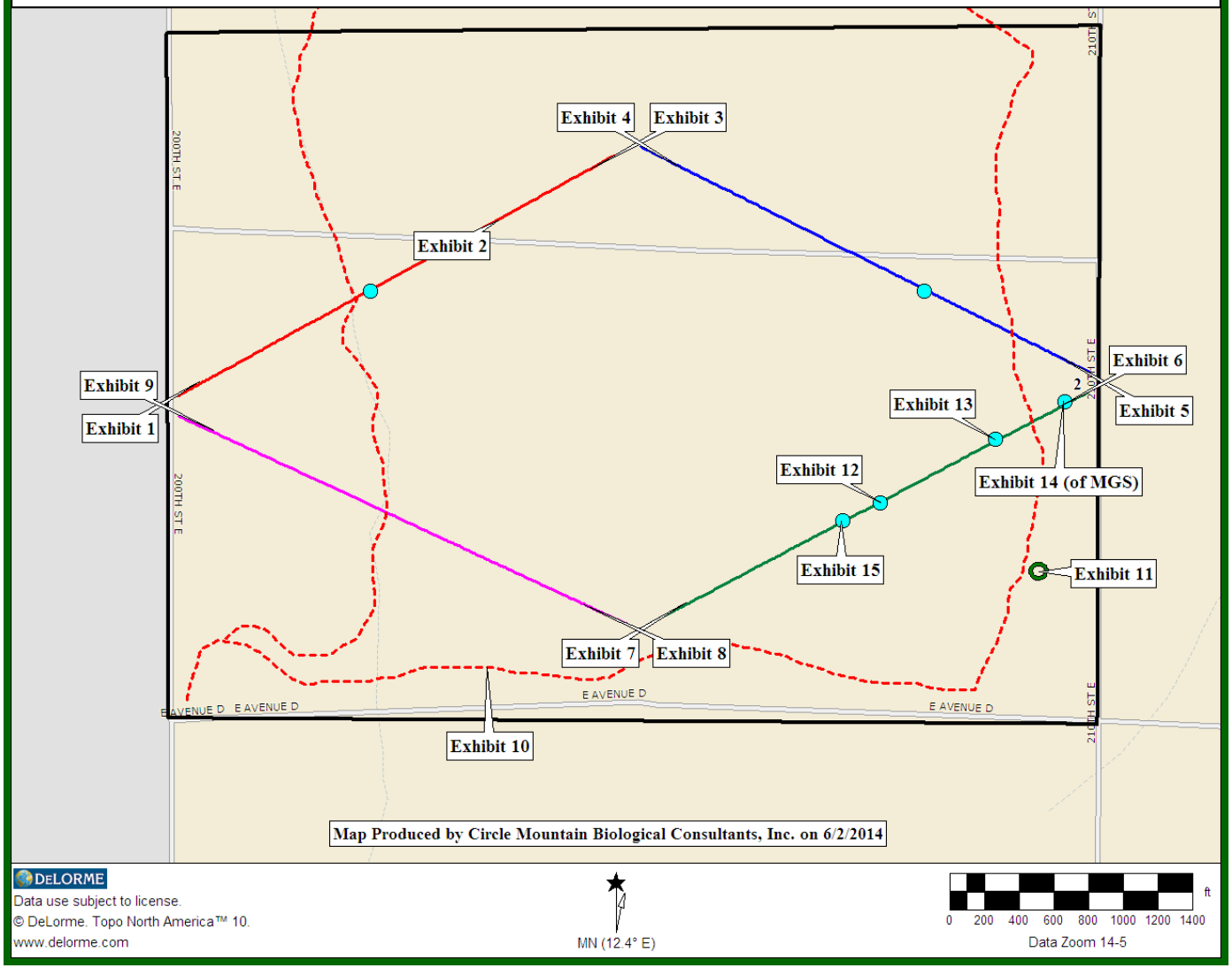
REPTILIA	REPTILES
Testudinidae	**Land tortoises**
14 *Gopherus agassizii*	Agassiz's desert tortoise (SC)
Iguanidae	**Iguanids**
14 *Gambelia wislizenii*	Long-nosed leopard lizard
14 *Sceloporus magister*	Desert spiny lizard
14 *Uta stansburiana*	Common side-blotched lizard
14 *Phrynosoma platyrhinos*	Desert horned lizard
Teiidae	**Whiptails**
14 *Cnemidophorus tigris*	Western whiptail
Viperidae	**Vipers**
14 *Crotalus scutulatus*	Mojave rattlesnake
AVES	BIRDS
Accipitridae	**Hawks, eagles, harriers**
14 *Buteo jamaicensis*	Red-tailed hawk
Falconidae	**Falcons**
14 *Falco mexicanus*	Prairie falcon (SC) (1.0-2.0 miles south)
Columbidae	**Pigeons and doves**
14 *Zenaida macroura*	Mourning dove
Cuculidae	**Cuckoos**
14 *Geococcyx californianus*	Greater roadrunner
Tytonidae	**Barn Owls**
14 *Tyto alba*	Common barn owl
Alaudidae	**Larks**
14 *Eremophila alpestris*	Horned lark
Hirundinidae	**Swallows**
14 *Hirundo rustica*	Barn swallow

Corvidae	**Crows and jays**
14 *Corvus corax*	Common raven
Troglodytidae	**Wrens**
14 *Salpinctes obsoletus*	Rock wren
Muscicapidae	**Thrushes and allies**
14 *Polioptila caerula*	Blue-gray gnatcatcher
Emberizidae	**Sparrows, warblers, tanagers**
14 *Amphispiza bilineata*	Black-throated sparrow
14 *Amphispiza belli*	Sage sparrow
14 *Icterus galbula*	Northern oriole
Fringillidae	**Finches**
14 *Carpodacus mexicanus*	House finch
MAMMALIA	MAMMALS
Leporidae	**Hares and rabbits**
14 *Lepus californicus*	Black-tailed hare
Sciuridae	**Squirrels**
14 *Citellus mohavensis*	Mohave ground squirrel (SC) (5 individuals)
14 *Otospermophilus beecheyi*	California ground squirrel
14 *Ammospermophilus leucurus*	Antelope ground squirrel
Heteromyidae	**Pocket mice**
14 *Dipodomys* sp.	Kangaroo rat
Cricetidae	**Rats and mice**
14 *Neotoma lepida*	Desert wood rat
Canidae	**Foxes, wolves and coyotes**
14 *Canis latrans*	Coyote
14 *Vulpes macrotis*	Kit fox (SC)
Mustelidae	**Weasels and skunks**
14 *Taxidea taxus*	American badger (SC)
Felidae	**Cats**
14 *Lynx rufus*	Bobcat

Nomenclature follows Stebbins, *A Field Guide to Western Reptiles and Amphibians* (2003), third edition; Sibley, National Audubon Society, the Sibley Guide to Birds (2000), first edition; and Ingles, Mammals of the Pacific States (1965), second edition.

APPENDIX D. PHOTOGRAPHIC EXHIBITS

Figure 5. Locations of Photographic Exhibits Taken at Phacelia Sanctuary in May 2014



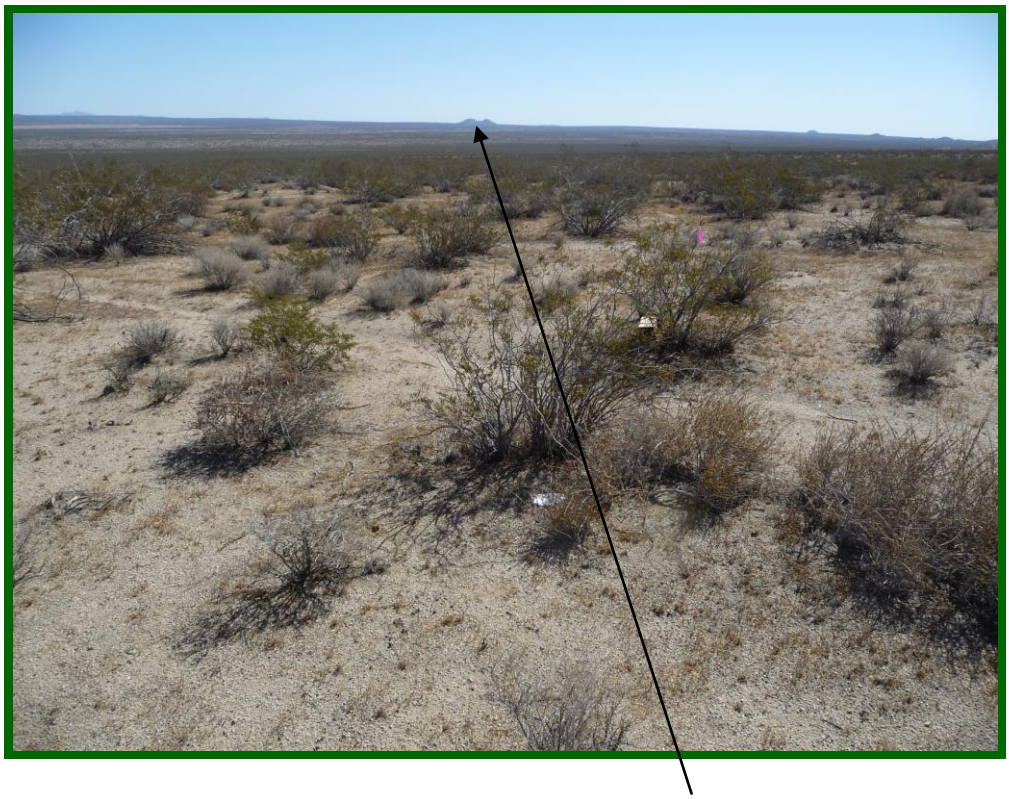


Exhibit 1. View from Station A1, facing northeast toward Haystack Butte (see Figure 5 for locations).

Exhibit 2. View of barren area, as located in Figure 5.

Exhibit 3. View from Station A25, facing southwest.

Exhibit 4. View from Station B1, facing southeast.

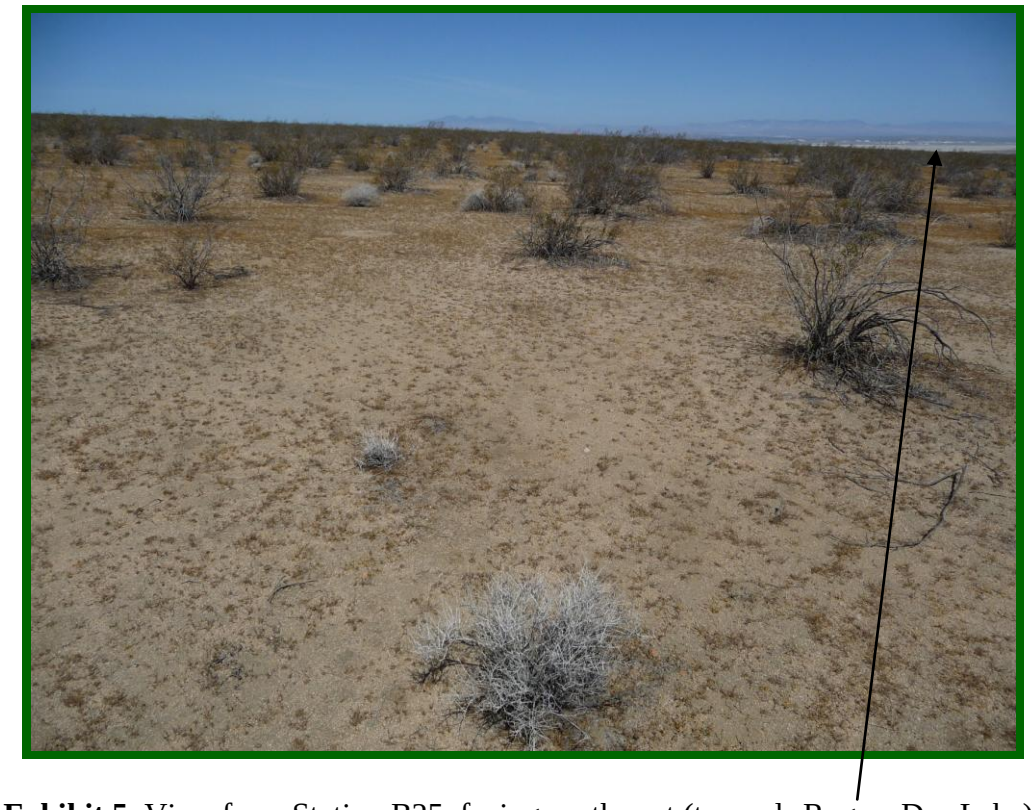


Exhibit 5. View from Station B25, facing northwest (towards Rogers Dry Lake).

Exhibit 6. View from Station C25, facing southwest.

Exhibit 7. View from Station C1, facing northeast.

Exhibit 8. View from Station D25, facing northwest.

Exhibit 9. View from Station D1, facing southeast.

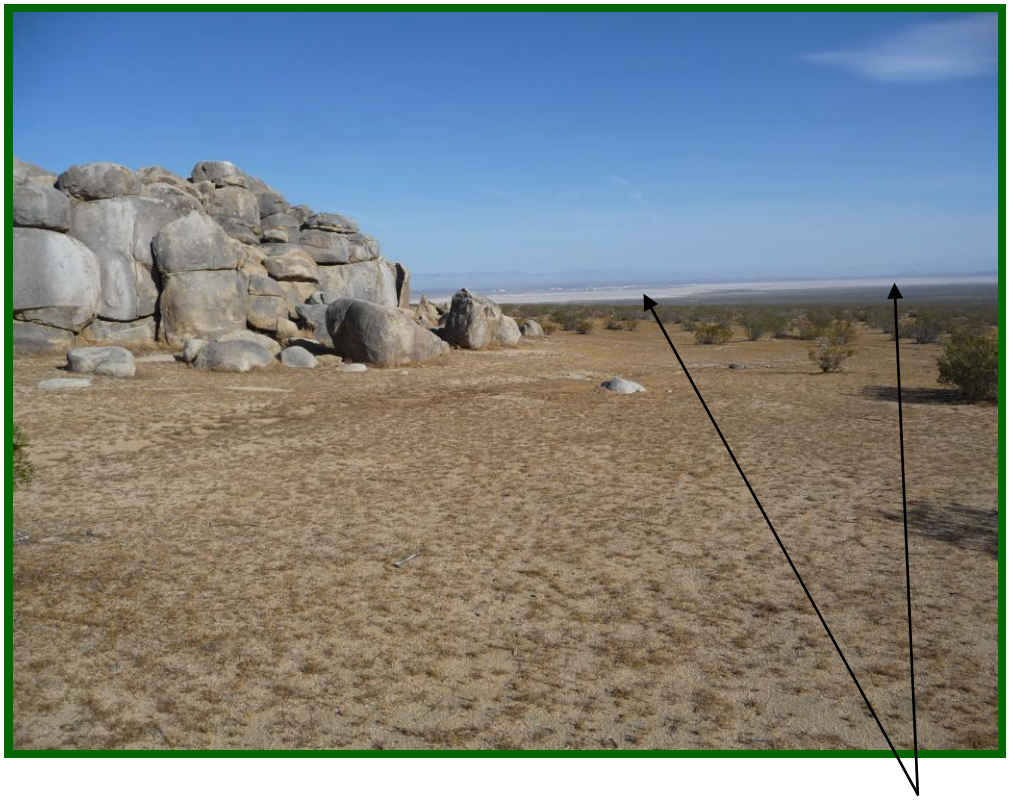


Exhibit 10. Rock pile near southern border of site, facing north towards Rogers Dry Lake.

Exhibit 11. One of the 36 creosote bush rings larger than 10 feet in diameter.

Exhibit 12. Adult, post-lactating female at Station C13 on 5/17/2014.

Exhibit 13. Young, 101g, non-reproductive female at Station C20 on 5/17/2014.

Exhibit 14. Young, 100g, non-reproductive female at Station C24 on 5/19/2014.

Exhibit 15. The post-lactating female first caught at Station C13 on 5/17/2014 was recaptured at Station C11 on 5/19/2014. Note black mark on rear-right flank that enabled us to identify her as a recapture.

Exhibit 16. One of several motorcycle trails on the site (not included in Figure 5, the trail runs through the eastern parts of Lines B and C).